Electronic TUBES

6AW8-A—8AW8-A

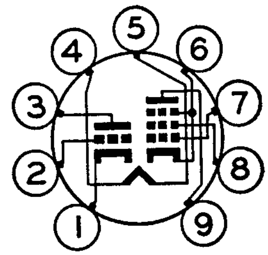
TRIODE-PENTODE

DESCRIPTION AND RATING

The 6AW8-A is a miniature tube containing a high-mu triode and a sharp-cutoff pentode. The triode section is intended for service as a sync separator and the pentode section as a video amplifier. As a result of its controlled heater-warm-up characteristic, the 6AW8-A is especially suited for use in television receivers which employ 600-milliampere, series-connected heaters. The 6AW8-A differs from the 6AW8 by incorporating a controlled plate-knee characteristic.

Except for heater ratings, the 8AW8-A is identical to the 6AW8-A. It is specially designed for use in television receivers which employ 450-milliampere, series-connected heaters.

BASING DIAGRAM



EIA 9DX

GENERAL

ELECTRICAL

	6AW8-A	8AW8-A	
Cathode—Coated Unipotential			
Heater Voltage	6.3	8.4	Volts
Heater Current	0.6	0.45	Amperes
Heater Warm-up Time*	11	11	Seconds
Direct Interelectrode Capacitances	With Shield†	Without Shield	
Pentode Section			
Grid-Number 1 to Plate	0.03	0.04	μμf
Input	10	10	μμf
Output	4.5	3.6	μμf
Triode Section			
Grid to Plate	2.2	2.2	μμf
Input	3.4	3.2	μμf
Output	1.7	0.32	μμf
Pentode Grid-Number 1 to Triode Plate	0.003	0.006	μμf
Triode Grid to Pentode Plate	0.006	0.016	μμf
Pentode Plate to Triode Plate	0.023	0.150	μμf

MECHANICAL

Mounting Position—Any
Envelope—T-6½, Glass
Base—E9-1, Small Button 9-Pin

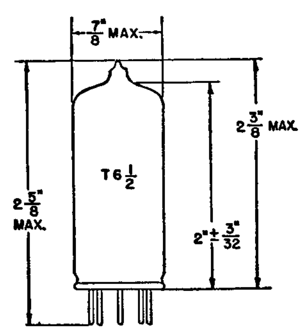
TERMINAL CONNECTIONS

Pin 1—Triode Cathode
Pin 2—Triode Grid
Pin 3—Triode Plate
Pin 4—Heater
Pin 5—Heater
Pin 6—Pentode Cathode, Grid Number 3, and Internal Shield
Pin 7—Pentode Grid Number 1
Pin 8—Pentode Grid Number 2 (Screen)
Pin 9—Pentode Plate

MAXIMUM RATINGS

DESIGN-CENTER VALUES	Pentode Section	Triode Section	
Plate Voltage	300	300	Volts
Screen-Supply Voltage	300	.....	Volts
Screen Voltage—See Screen Rating Chart			
Positive DC Grid-Number 1 Voltage	0	0	Volts
Negative DC Grid-Number 1 Voltage	50	.....	Volts
Plate Dissipation	3.25	1.0	Watts
Screen Dissipation	1.0	.....	Watts
Heater-Cathode Voltage			
Heater Positive with Respect to Cathode			
DC Component	100	100	Volts
Total DC and Peak	200	200	Volts
Heater Negative with Respect to Cathode			
Total DC and Peak	200	200	Volts
Grid-Number 1 Circuit Resistance			
With Fixed Bias	0.25	0.5	Megohms
With Cathode Bias	1.0	1.0	Megohms

PHYSICAL DIMENSIONS



EIA 6-3

△Supersedes pages 1 and 2, dated 6-56

TRIODE-PENTODE

DESCRIPTION AND RATING

The 6AW8-A is a miniature tube containing a high-mu triode and a sharp-cutoff pentode. The triode section is intended for service as a sync separator and the pentode section as a video amplifier. As a result of its controlled heater-warm-up characteristic, the 6AW8-A is especially suited for use in television receivers which employ 600-milliampere, series-connected heaters. The 6AW8-A differs from the 6AW8 by incorporating a controlled plate-knee characteristic.

GENERAL

ELECTRICAL

Cathode—Coated Unipotential

Heater Characteristics and Ratings	Series Heater Operation	Parallel Heater Operation	
Heater Voltage, AC or DC	6.3*	6.3±0.6‡	Volts
Heater Current	0.6±0.04†	0.6§	Amperes
Heater Warm-up Time¶	11		Seconds

Direct Interelectrode Capacitances	With Shield#	Without Shield	
Pentode Section			
Grid-Number 1 to Plate: (Pg1 to Pp), maximum	0.04	0.05	pf
Input: Pg 1 to (h+Pk+Pg2+Pg3+i.s.)	10	10	pf
Output: Pp to (h+Pk+Pg2+Pg3+i.s.)	4.5	3.6	pf

ELECTRICAL (Cont'd)

	With Shield#	Without Shield	
Triode Section			
Grid to Plate: (Tg to Tp)	2.2	2.2	pf
Input: Tg to (h+Tk)	3.4	3.2	pf
Output: Tp to (h+Tk)	3.0	1.8	pf
Pentode Grid-Number 1 to Triode Plate: (Pg1 to Tp), maximum	0.005	0.008	pf
Pentode Plate to Triode Plate: (Pp to Tp), maximum	0.025	0.150	pf

MECHANICAL

Mounting Position—Any
Envelope—T-6½, Glass
Base—E9-1, Small Button 9-Pin

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES

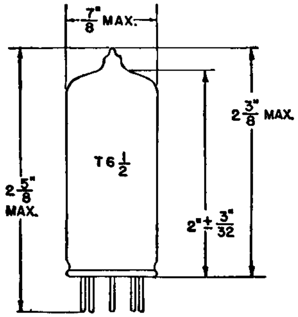
	Pentode Section	Triode Section	
Plate Voltage	330	330	Volts
Screen-Supply Voltage	330	...	Volts
Screen Voltage—See Screen Rating Chart			
Positive DC Grid-Number 1 Voltage	0	0	Volts
Plate Dissipation	3.75	1.1	Watts
Screen Dissipation	1.1	...	Watts
Heater-Cathode Voltage			
Heater Positive with Respect to Cathode			
DC Component	100	100	Volts
Total DC and Peak	200	200	Volts
Heater Negative with Respect to Cathode			
Total DC and Peak	200	200	Volts
Grid-Number 1 Circuit Resistance			
With Fixed Bias	0.25	0.5	Megohms
With Cathode Bias	1.0	1.0	Megohms

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

PHYSICAL DIMENSIONS

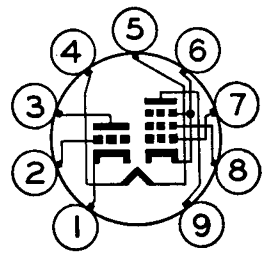


EIA 6-3

TERMINAL CONNECTIONS

Pin 1—Triode Cathode
Pin 2—Triode Grid
Pin 3—Triode Plate
Pin 4—Heater
Pin 5—Heater
Pin 6—Pentode Cathode, Grid Number 3, and Internal Shield
Pin 7—Pentode Grid Number 1
Pin 8—Pentode Grid Number 2 (Screen)
Pin 9—Pentode Plate

BASING DIAGRAM



EIA 9DX

CHARACTERISTICS AND TYPICAL OPERATION

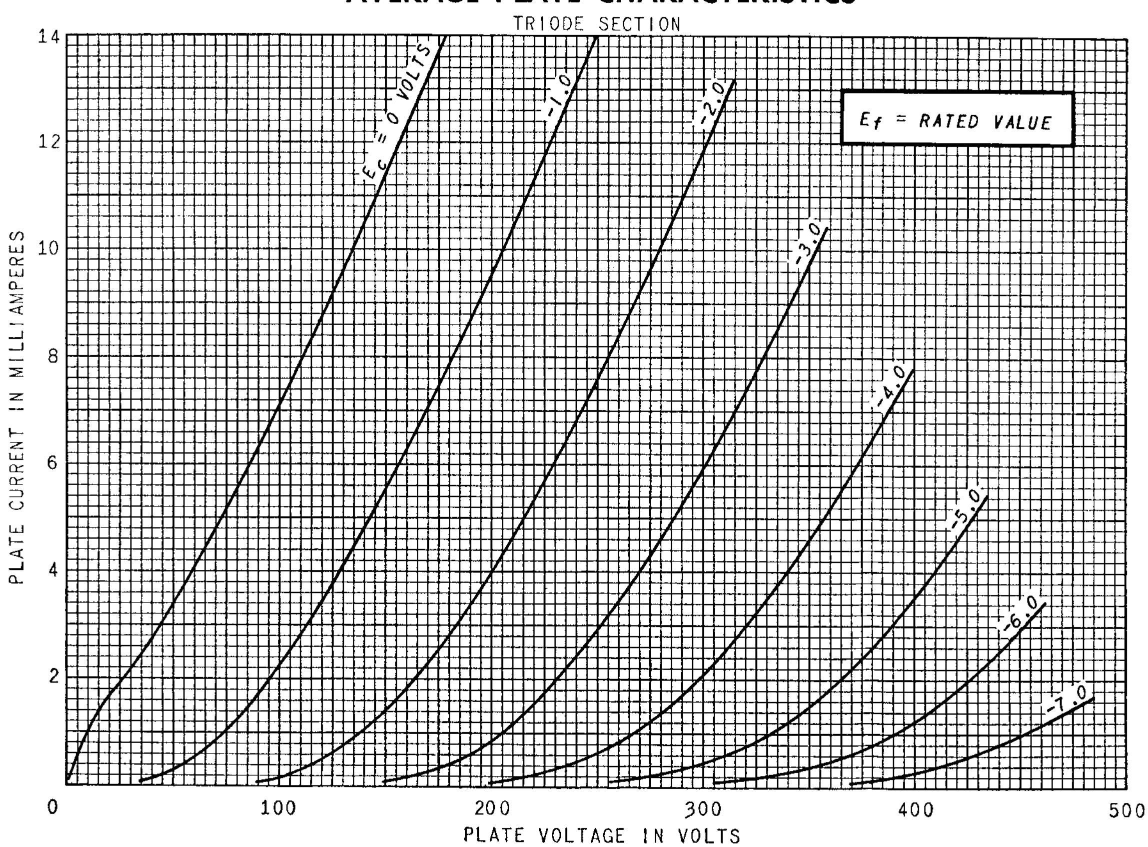
CLASS A_1 AMPLIFIER	Pentode Section		Triode Section	
Plate Voltage	65	200	200	Volts
Screen Voltage	150	150	....	Volts
Grid-Number 1 Voltage	0‡	....	−2.0	Volts
Cathode-Bias Resistor	....	180	....	Ohms
Amplification Factor	....	....	70	
Plate Resistance, approximate	....	400000	17500	Ohms
Transconductance	....	9000	4000	Micromhos
Plate Current	42	13	4.0	Milliamperes
Screen Current	12.5	3.5	....	Milliamperes
Grid-Number 1 Voltage, approximate Ib = 10 Microamperes	....	−10	−5	Volts

* The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

† With external shield (EIA 315) connected to cathode of section under test.

‡ Applied for short interval (two seconds maximum) so as not to damage tube.

AVERAGE PLATE CHARACTERISTICS



△Supersedes pages 1 and 2, dated 6-56.

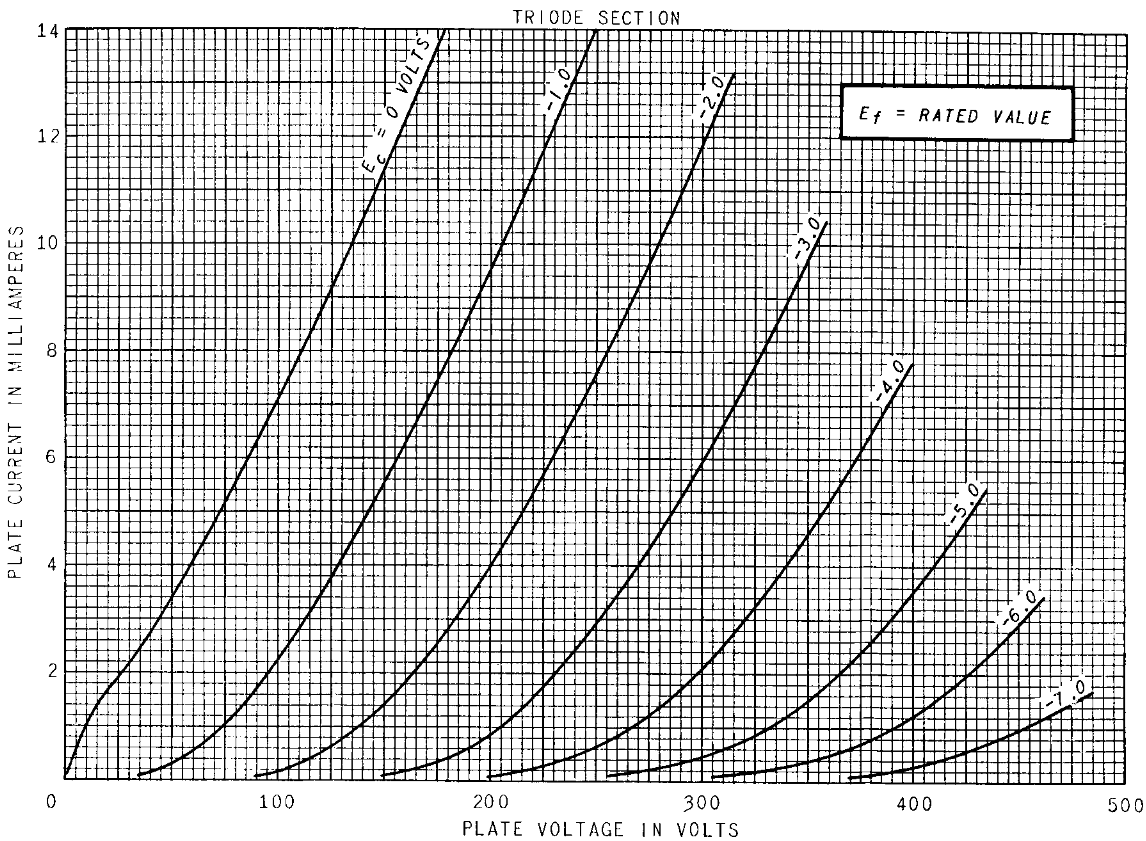
CHARACTERISTICS AND TYPICAL OPERATION

CLASS A₁ AMPLIFIER	Pentode Section		Triode Section	
Plate Voltage	65	150	200	Volts
Screen Voltage	150	150	....	Volts
Grid-Number 1 Voltage	0△	......	−2.0	Volts
Cathode-Bias Resistor		150	....	Ohms
Amplification Factor		......	70	
Plate Resistance, approximate		200000	....	Ohms
Transconductance		9500	4000	Micromhos
Plate Current	46	15	4.0	Milliamperes
Screen Current	15	3.5	....	Milliamperes
Grid-Number 1 Voltage, approximate Ib = 20 Microamperes	...	−8	−5	Volts

FOOTNOTES

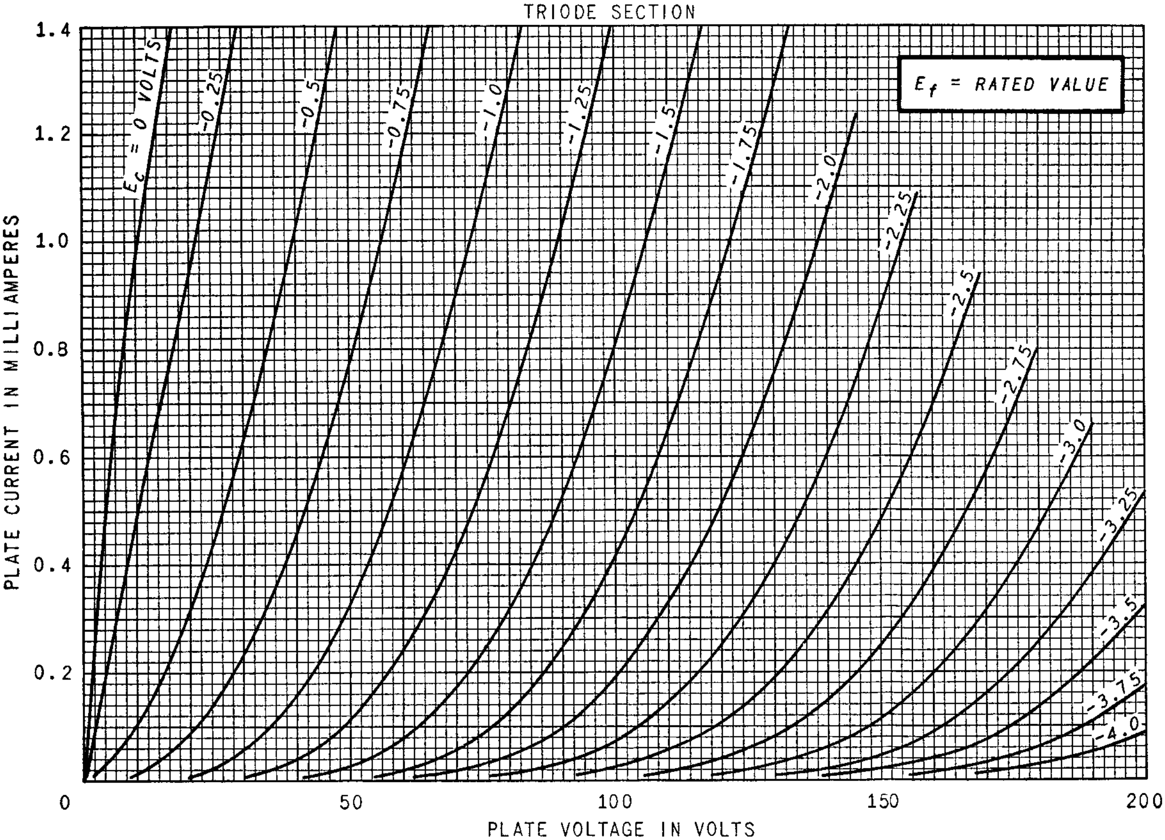
* Heater voltage for a bogey tube at If = 0.6 amperes.
† For series heater operation, the equipment designer should design the equipment so that heater current is centered at the specified bogey value, with heater supply variations restricted to maintain heater current within the specified tolerance.
‡ The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.
§ Heater current of a bogey tube at Ef = 6.3 volts.
¶ The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.
With external shield (EIA 315) connected to cathode of section under test.
△Applied for short interval (two seconds maximum) so as not to damage tube.

AVERAGE PLATE CHARACTERISTICS



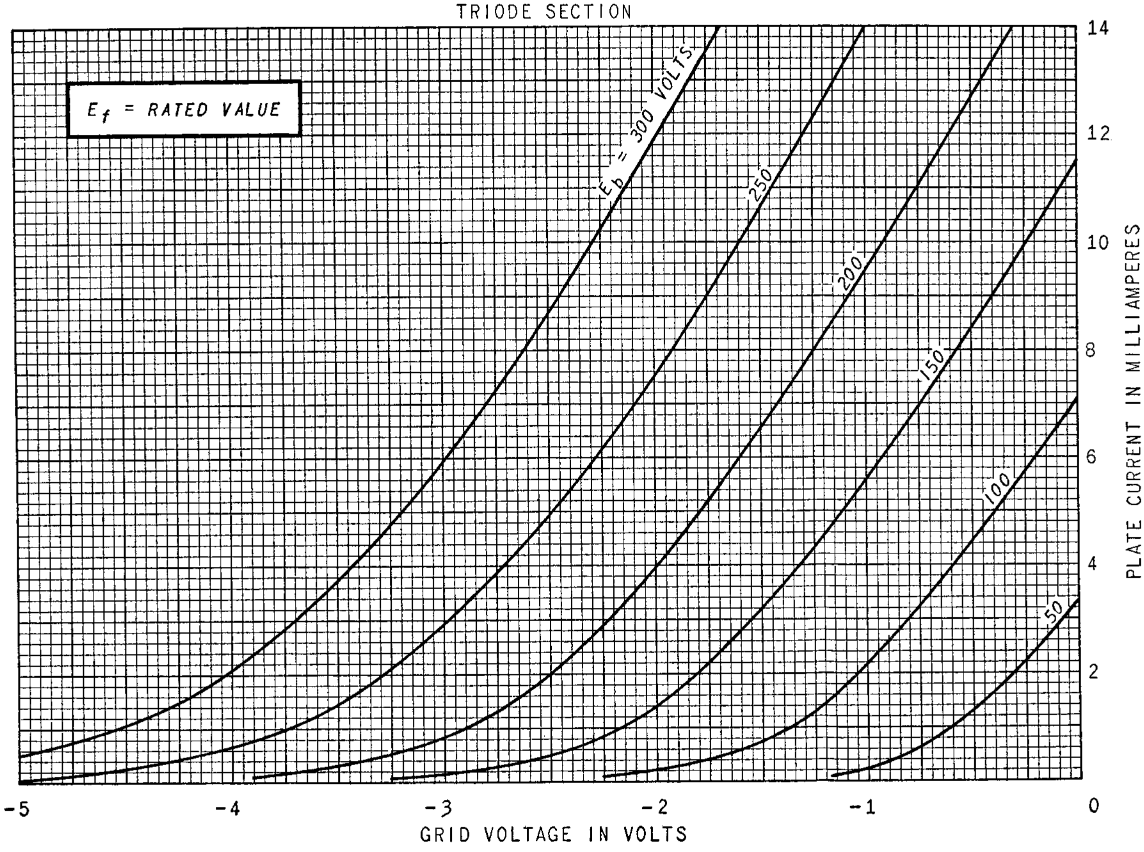
AVERAGE PLATE CHARACTERISTICS

TRIODE SECTION



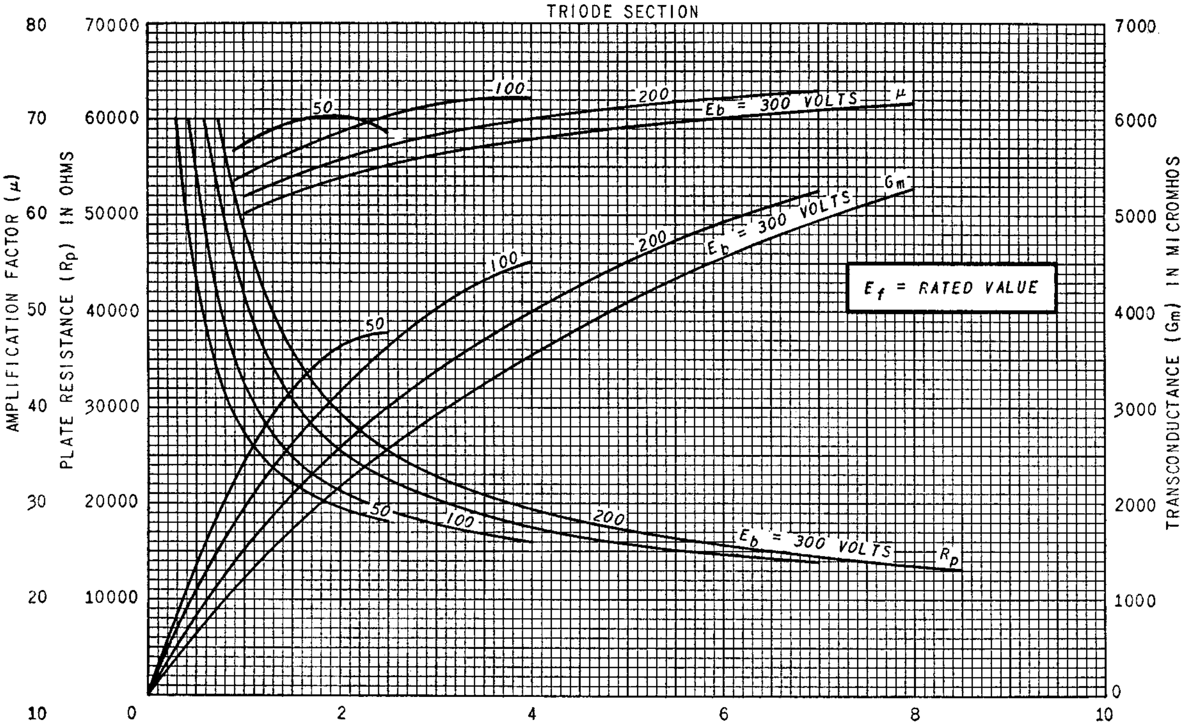
AVERAGE TRANSFER CHARACTERISTICS

TRIODE SECTION



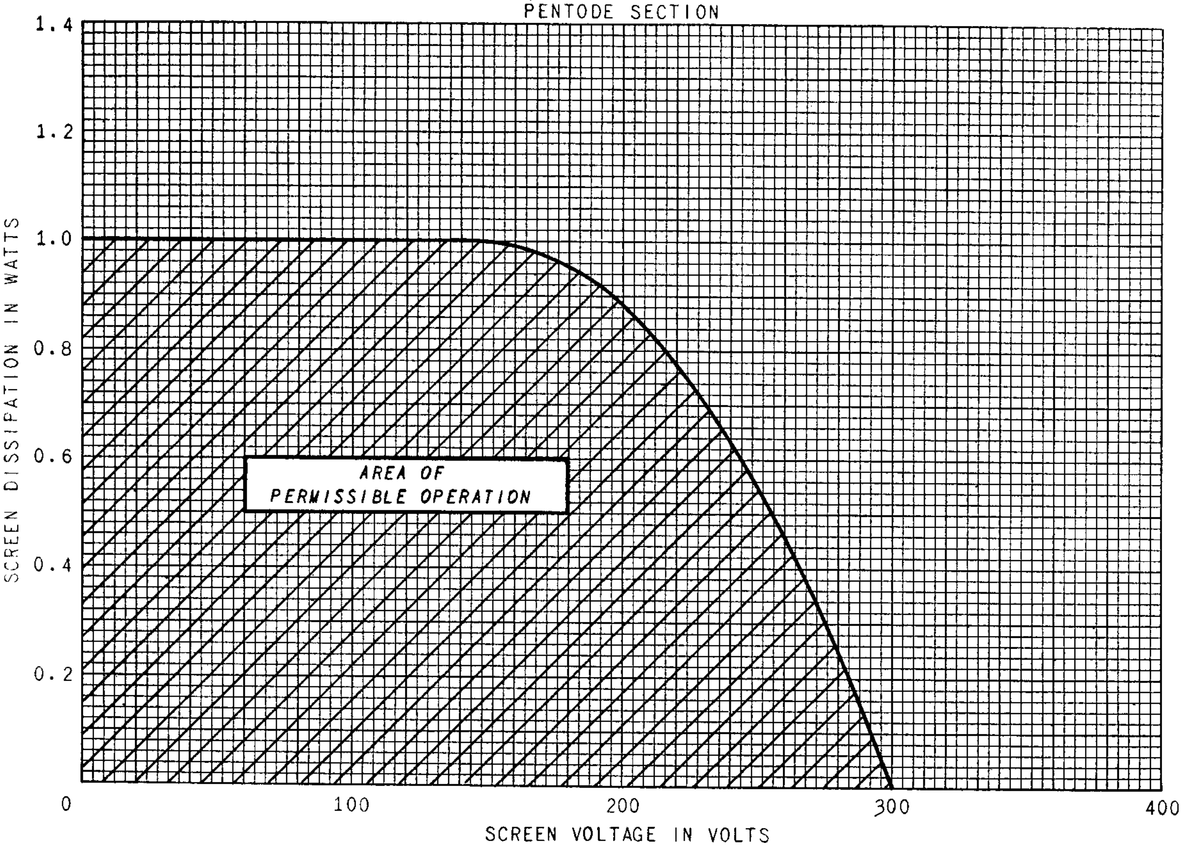
AVERAGE CHARACTERISTICS

TRIODE SECTION



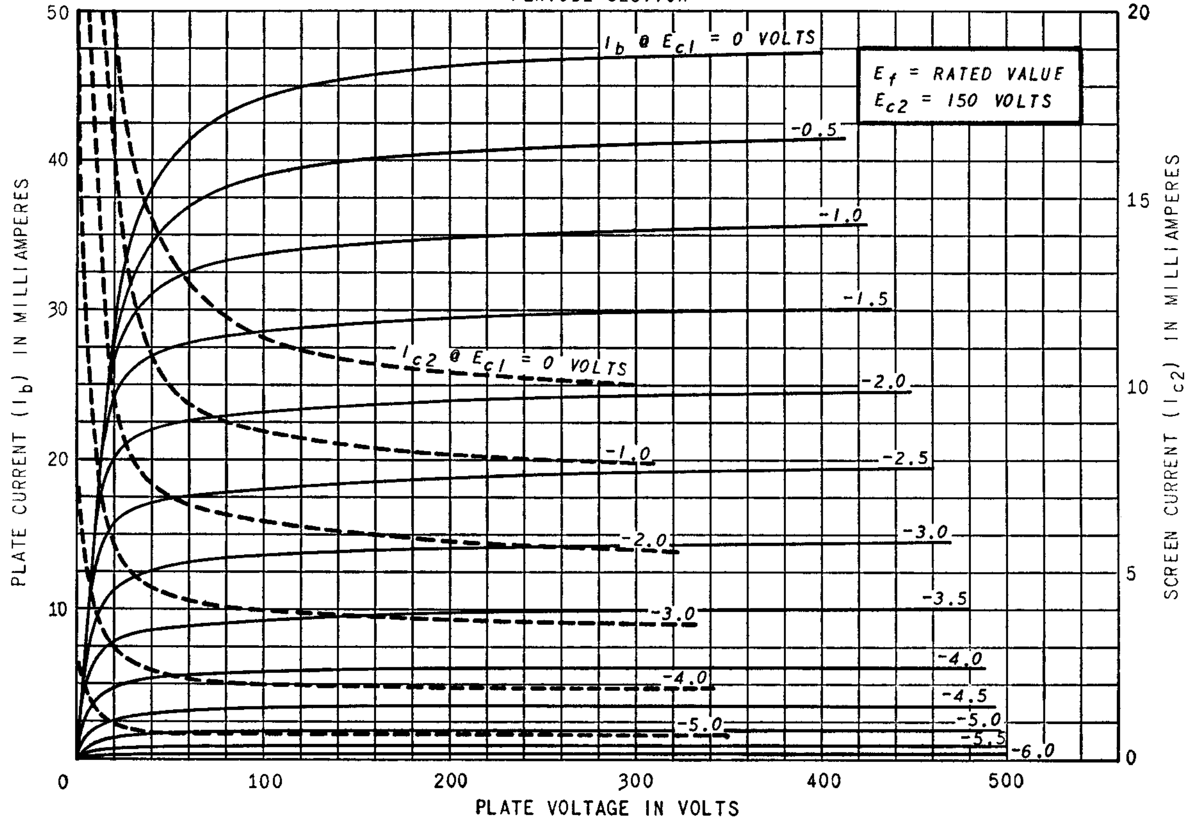
SCREEN RATING CHART

PENTODE SECTION



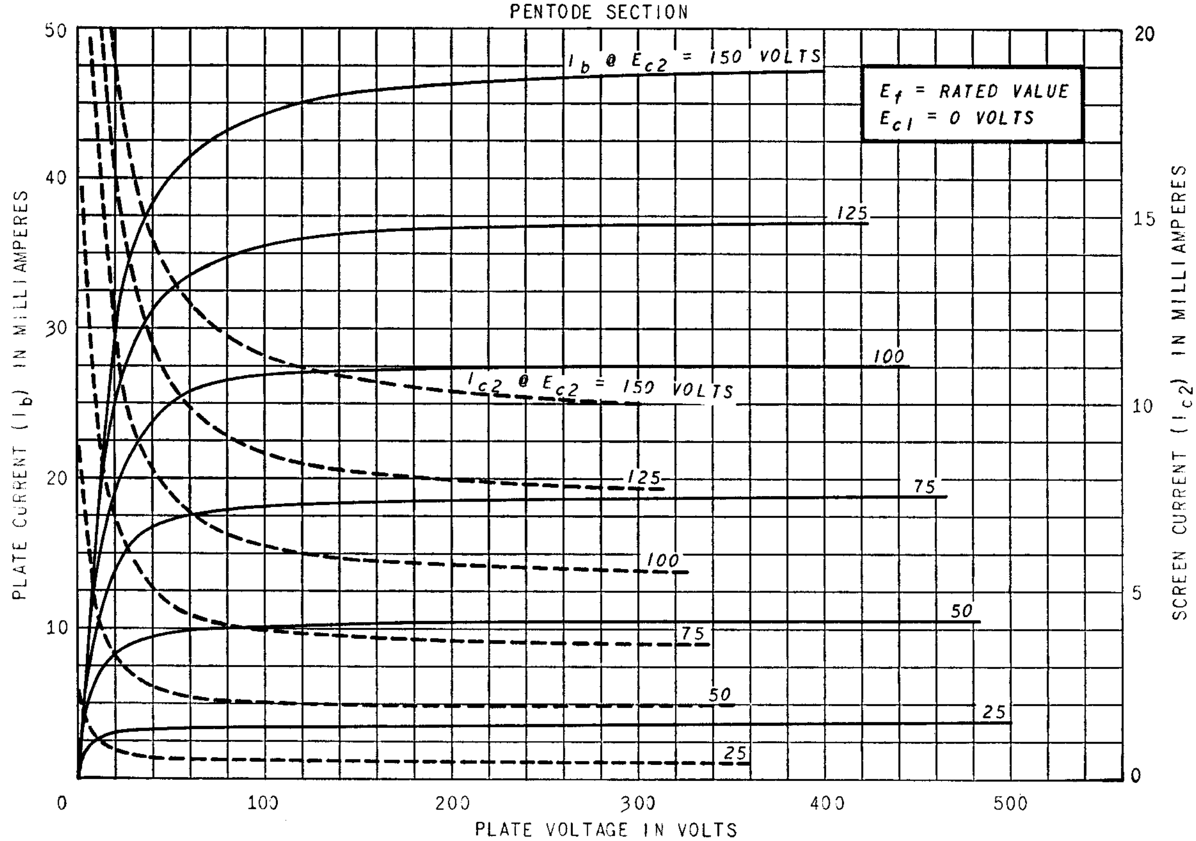
AVERAGE PLATE CHARACTERISTICS

PENTODE SECTION



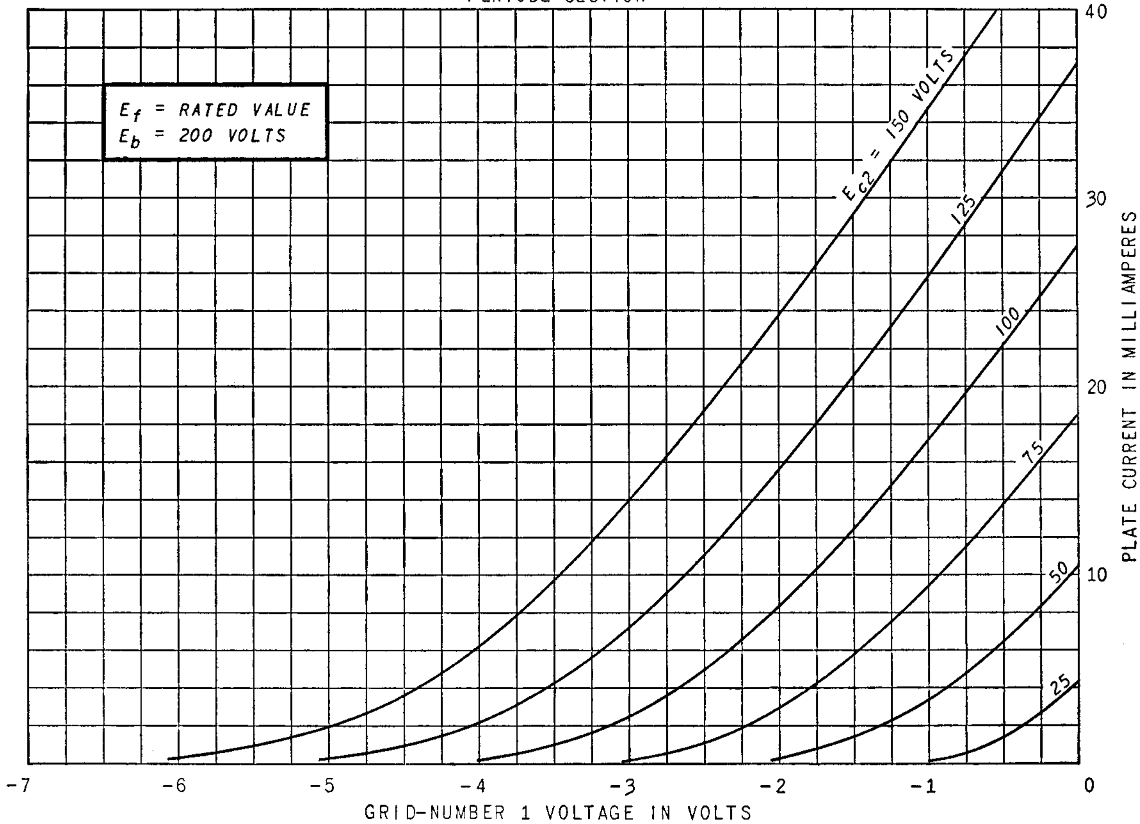
AVERAGE PLATE CHARACTERISTICS

PENTODE SECTION



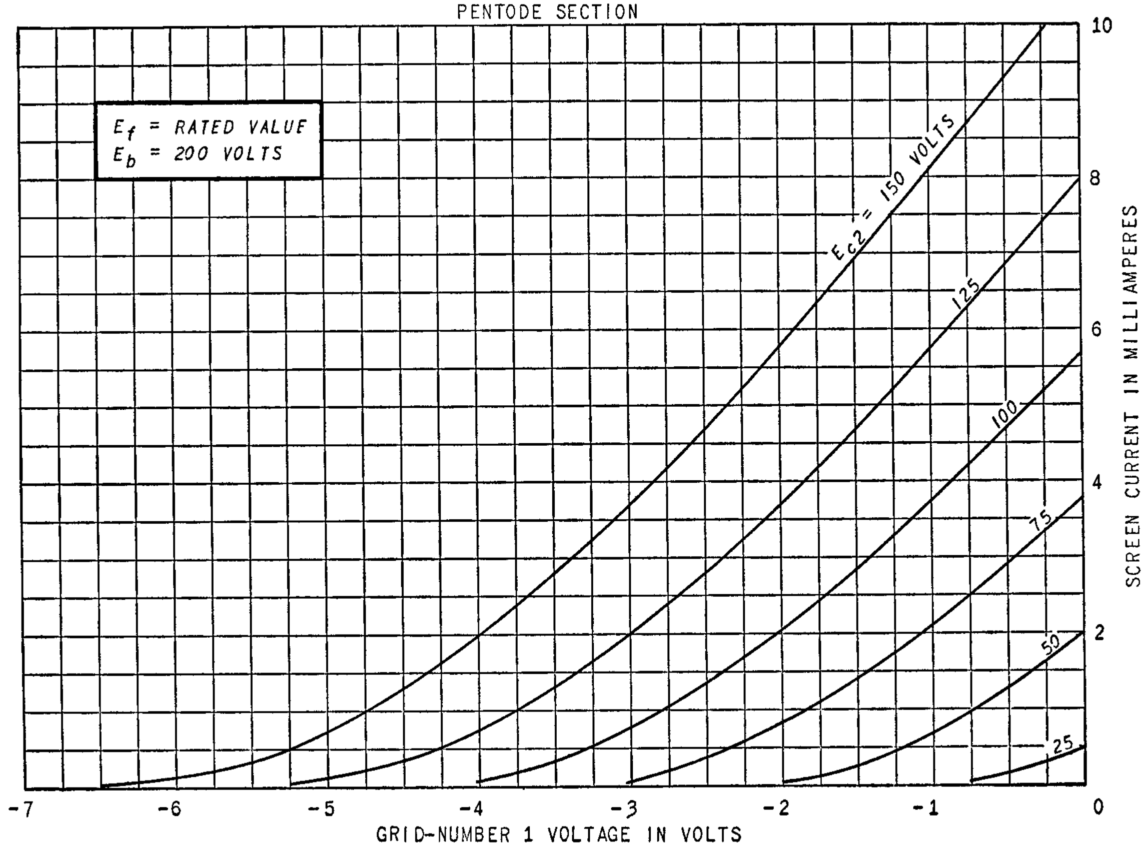
AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION



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